

# Improving the Effectiveness of the National DNA Data Bank: A Consideration of the Criminal Antecedents of Predatory Sexual Offenders

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*Les auteurs ont évalué l'efficacité de la Loi sur l'identification par les empreintes génétiques en déterminant si 106 prédateurs sexuels meurtriers et 85 prédateurs sexuels violeurs avaient déjà été condamnés pour des infractions exigeant la communication du profil d'identification génétique à la Banque nationale de données génétiques. Ils ont donc vérifié si les casiers judiciaires des délinquants faisaient état de condamnations antérieures pour des infractions primaires ou secondaires désignées, selon les dispositions de cette loi, ainsi que pour des infractions non désignées ayant été commises avant le meurtre ou l'agression sexuelle. Or, la majorité des meurtriers (68 %) et des agresseurs sexuels (59 %) n'avaient été déclarés coupables d'aucune infraction primaire désignée; 50 % des meurtriers et 37 % des agresseurs sexuels n'avaient été déclarés coupables d'aucune infraction secondaire désignée; et 39 % des meurtriers et 28 % des agresseurs sexuels n'avaient été déclarés coupables d'aucune infraction désignée. Dans l'ensemble, ce sont les infractions non désignées qui faisaient l'objet du plus grand nombre de condamnations antérieures, alors que les infractions primaires désignées faisaient l'objet du nombre moins élevé de condamnations antérieures. Des condamnations antérieures pour vol (infraction non désignée) et pour introduction par effraction (infraction secondaire) étaient*

*les plus nombreuses pour les deux groupes de délinquants. Enfin, les résultats laissent entendre qu'on pourra améliorer l'efficacité de la Banque nationale de données génétiques en exigeant le prélèvement d'échantillons d'ADN à la suite de condamnations pour certaines infractions non désignées ou secondaires désignées.*

*This study assessed the effectiveness of the DNA Identification Act by examining whether 106 predatory sexual murderers and 85 predatory sexual assaulters had earlier convictions for offences that require offenders to provide a DNA profile to the National DNA Data Bank (NDDB). Offenders' criminal records were checked for convictions of primary and secondary designated offences, as stipulated by the act, and of non-designated offences that occurred prior to the murder or assault. A majority of the murderers (68%) and assaulters (59%) had no primary designated offence convictions; 50% of the murderers and 37% of the assaulters had no secondary designated offence convictions; and 39% of the murderers and 28% of the assaulters had no prior convictions for any designated offence. Overall, the largest number of prior convictions was for non-designated offences and the smallest for primary designated offences. Previous convictions for theft (non-designated) and breaking and entering (secondary) were most prevalent among the murderers and assaulters. Results suggest that the effectiveness of the NDDB for the identification of sexual predators may be improved by requiring mandatory provision of DNA samples following convictions for some non-designated and secondary designated offences.*

## **Introduction**

Forensic analysis of human deoxyribonucleic acid (DNA) has proved to be a useful procedure for the resolution of criminal investigations. There have been cases in which individuals were exonerated because their unique DNA profile did not match the DNA profile derived from biological trace evidence at the crime scene (Anderson and Anderson 1998; Wells, Small, Penrod, Malpass, Fulero, and Brimacombe 1998). Conversely, DNA analysis has also led to the successful identification and conviction of offenders (Jackson and Jackson 2004; McDonald 1998). DNA evidence has further been used to detect the presence of serial offenders by linking different crimes to one individual (Williams, Johnson, and Martin 2004). The benefits to the administration of justice highlighted by these achievements inspired police forces to advocate the implementation of a DNA data bank to store DNA samples obtained through criminal investigations. As a result,

National DNA Data Bank (NDDB) legislation has been established in Canada to assist in the identification of serious offenders by ensuring the mandatory provision of DNA samples from individuals following convictions for particular "designated" offences. To date, there have been some reported successes. However, the usefulness of the current list of designated offences for identifying persons alleged to have committed serious offences has never been empirically examined. Consequently, the current study examines the extent to which these offences are found in the criminal history of predatory sexual murderers and assaulters and, thus, whether the NDDB could have been used to identify them during the murder or assault investigation.

The potential power of DNA analysis has been noted since it was first used successfully in the criminal investigation of the assault and murder of two young women near Leicester, U.K. (Wambaugh 1989). In that case, police officers used DNA analysis to determine that the same individual had committed both homicides and that the primary suspect was not the perpetrator. The police subsequently collected and analysed DNA samples from more than 4,500 men in the villages of Narborough, Littlethorpe, and Enderby and eventually found a match between the DNA profile of Colin Pitchfork and crime-scene DNA evidence (Wambaugh 1989). While this so-called "blooding" method proved successful in this particular case, it is likely to be inefficient (i.e., time-consuming and costly), and it raises human rights issues (see Zigayer 2001 for a summary of human rights issues associated with DNA sampling).

Police organizations in Canada have also recognized the power of DNA analysis to ensure the protection of society through the detection, arrest, and conviction of offenders and the exoneration of the wrongly convicted (McDonald 1998). In 1995, the Canadian Association of Chiefs of Police (CACP) joined police organizations across the country to urge the government to improve the identification of suspects by creating a national DNA data bank to store the profiles of convicted offenders. The Departments of the Solicitor General and Justice investigated the feasibility of a DNA data bank by consulting a range of government agencies, privacy groups, and forensic and genetic organizations, which resulted in Bill C-3 being tabled in the House of Commons in April 1997. As a result, the DNA Identification Act was proclaimed in force on 30 June 2000; the primary purpose of this legislation is to "establish a national DNA data bank to help law enforcement agencies identify persons alleged to have committed designated offences" (s. 3).

The NDDDB contains DNA profiles that have been collected from crime scenes (the Crime Scene Index) and convicted offenders (the Convicted Offenders Index, or COI). The data bank operates by searching for DNA profile matches between and within the two indexes. The COI contains DNA profiles of persons convicted of primary designated offences, as specified by the Criminal Code of Canada (CCC), s. 487.04. Convicted offenders may also be required to provide a DNA sample upon conviction for a secondary designated offence when it is deemed necessary by the courts for public safety.<sup>1</sup> According to NDDDB annual reports, there has been a steady increase in offender hits (i.e., a biological sample from a crime scene matching an individual's DNA profile included in the COI) (National Police Services 2001); the total number of assisted investigations had reached 3,134 as of April 2005 (NDDDB 2005).

The most crucial issue in determining the usefulness of the NDDDB is whether an unidentified or alleged offender has previously provided a DNA profile to the data bank. In other words, the data bank is useless for identifying serious offenders unless it already contains their DNA profile. Under current legislation, offenders are compelled to provide a DNA sample to the NDDDB if they are convicted of a primary designated offence and can be compelled for a secondary designated offence conviction if the court so demands. It follows that the data bank can only be useful to identify serious offenders if they have been previously convicted of a designated offence. According to the Department of Justice (2002), the 38 primary designated offences were selected because of the nature of the offence, the seriousness of the offence, and the likelihood that some biological evidence would be left at the crime scene by the perpetrator. These criteria appear politically acceptable for compelling an individual to provide a DNA sample to the NDDDB. The addition of an evidence-based criterion, however, would increase the likelihood of identifying serious offenders.

Many criminological studies have shown that offenders who commit serious offences have previously committed less serious ones (Blumstein, Cohen, and Farrington 1988; Farrington 1983, 1994; Greenberg 1996a, 1996b; Miller, Dinitz, and Conrad 1982; Wolfgang, Figlio, and Sellin 1972, 1983). For instance, the U.S. Department of Justice reported as early as 1968 that 92% of offenders arrested for assault, 88% of those arrested for homicide, and 86% of those arrested for robbery had a previous arrest record. More recently, a study by David Farrington (1991) found that 86% of convicted violent offenders

had prior convictions for non-violent offences. Using empirical regularities of criminal antecedents may provide law enforcement personnel with a way to collect DNA samples that are of greater investigative value. Reports from the Florida Department of Law Enforcement Convicted Offender Data Bank indicate that the inclusion of offenders convicted of less serious crimes has increased the solvability of serious crimes (Charron 2003). For example, 56% of those offenders linked to sexual assaults and homicides through the Florida DNA data bank were originally entered into the data bank following burglary convictions. Overall, the inclusion of less serious crimes was credited with solving 16% of Florida's sexual assaults and 25% of the state's murders. In Canada, expanding the list of primary designated offences to include less serious offences, which are often found in the criminal records of violent offenders, might also increase the usefulness of the DNA data bank.

Given the implications for police investigations and court proceedings, along with the cost to implement and maintain the NDDDB,<sup>2</sup> it is imperative that decisions about which offenders should be required to provide DNA profiles be informed by empirical research. The study reported here examined the criminal antecedents of predatory sexual murderers and assaulters in order to determine whether the NDDDB could have been useful for their identification.

## **Method**

### **Sample**

The sample included 106 predatory sexual murderers and 85 predatory sexual assaulters convicted in Canada. Roughly 73% of the sexual murderers and 89% of the sexual assaulters were convicted of criminal offences prior to the murder or assault for which they were identified. Of those who had criminal records, the average number of convictions was 10.6 ( $SD = 13.3$ , range = 1–89) among the murderers and 11.0 ( $SD = 11.0$ , range = 1–48) among the assaulters.

### **Procedure**

The first author compiled the predatory sexual offender sample from available legal records and published accounts. Sexual homicide and sexual assault cases were identified mainly by searches through court documents. Sexual assaulters and murderers were flagged by

convictions for sexual assault and homicide respectively. In order to classify them as sexual predators, case details such as the offender's relationship to the victim, autopsy findings, and crime scene characteristics (e.g., appearance of clothing, staging of the body) were interpreted.

Recorded from the criminal record of each offender were the total number of convictions and the Criminal Code violations prior to the identified case. For every offender, each violation was classified as either a *primary*, a *secondary*, or a *non-designated* offence. The primary and secondary offences are those stipulated by Criminal Code s.487.04; the non-designated offences are not included in the DNA Identification Act. Table 1 contains a list of Criminal Code violations that were grouped together because either they refer to the same offence (i.e., sexual assault and rape), all the sub-types were designated offences (i.e., arson), or the violations were thematically similar (e.g., breach of recognizance and breach of undertaking). Convictions for indecent assault of a female, forcible confinement, and forcible seizure were not classified as primary offences. Although the former is typically defined in the same manner as sexual assault, and the latter two in the same manner as kidnapping, they, unlike rape, are not currently designated as primary offences in the Criminal Code.

## Results

Table 2 presents the percentage of the sexual murderers and sexual assaulters with no prior convictions for primary or secondary designated offences. The table shows that roughly 68% of the murderers and 59% of the assaulters had not been previously convicted for any primary designated offences, while 50% of the murderers and approximately 36% of the assaulters had no convictions for secondary designated offences. It can also be seen that approximately 39% of the murderers and 28% of the assaulters had no prior convictions for any primary or secondary designated offences. The sexual murderers had no previous convictions for 26 of the 38 primary designated offences and no previous convictions for 13 of the 21 secondary designated offences. The sexual assaulters had no previous convictions for 29 (76%) and 15 (71%) of the primary and secondary designated offences, respectively.

Table 3 shows the percentages of sexual murderers previously convicted of each primary and secondary designated offence and of

Table I: Criminal Code violations included in offence categories

Offence category	Criminal Code violations
Primary	
Sexual assault	Sexual assault; rape
Secondary	
Arson	Arson – disregard for human life; arson – own property; arson; setting fire to other substance
Non-designated	
Theft	Theft over; theft under; theft of automobile; taking automobile without consent
Breach	Breach of probation, recognizance, undertaking, or court order; bail violation; failure to appear/attend court
Possession by crime	Possession of stolen property; possession of property obtained by crime; possession of stolen credit card; possession of stolen automobile
Driving	Driving while prohibited; impaired driving; driving with more than 80 mg of alcohol; criminal negligence during the operation of a motor vehicle
Mischief	Mischief to public property; mischief to private property
Possessing weapons	Possession of a weapon; possession of prohibited weapon; carrying a concealed weapon; possession of an unregistered restricted weapon
Using firearms	Pointing a firearm; using a firearm during the commission of an offence; dangerous use of a firearm; discharging a firearm
Drugs	Possession of narcotic or controlled substance; possession of narcotic or controlled substance for the purpose of trafficking; trafficking of narcotic or controlled substance
Breaking and entering	Breaking and entering; forcibly breaking out
Escaping	Escaping lawful custody; being unlawfully at large; prison breach
Deception	Fraud; fraudulently obtaining food and lodgings; fraudulently obtaining transportation; forgery; uttering forged documents; use of stolen credit card; impersonation; false pretences

**Table 2: Percentage of offenders not previously convicted of a NDDB-designated offence**

Designated offence category	Offenders			
	Sexual murderers		Sexual assaulters	
	#	%	#	%
Primary	72	68	50	59
Secondary	53	50	31	36
Primary and secondary	41	39	24	28

Note: Included in these data are the 29 (27%) sexual murderers and 9 (11%) sexual assaulters who were not previously convicted of any offence.

the most prevalent non-designated offences. A designated offence was omitted from Table 3 if no offender in the sample had been convicted of it prior to the murder. Sexual assault occurred most frequently, followed by assault with a weapon or causing bodily harm. As for secondary designated offences, approximately half the offenders had been convicted of breaking and entering, followed by robbery and assault. Nine non-designated offences were found in more than 10% of the sexual murderers' criminal records. Theft was the most prevalent, followed by court order breaches, possession of stolen property, and driving offences.

Table 4 presents the percentages of sexual assaulters previously convicted of each primary and secondary designated offence and of the most prevalent non-designated offences. As in Table 3, designated offences with zero incidences prior to the assault were omitted. Again, sexual assault was the most prevalent primary designated offence conviction, followed by assault with a weapon or causing bodily harm. The most prevalent secondary designated offence convictions were for breaking and entering, assault, and robbery. Eleven non-designated offences were found in more than 10% of the sexual assaulters' criminal records. Theft was again the most prevalent, followed by court order breaches, possession of stolen property, driving offences, escaping lawful custody, and drug-related offences.

## Discussion

The findings of this study suggest that a minority of predatory sexual murderers and assaulters would have had a DNA profile in the NDDB that police could have used to identify them. If all offenders convicted



**Table 3: Breakdown of the previous convictions of the sexual murderers with criminal records (N = 77)**

<b>Previous conviction</b>	<b>#</b>	<b>%</b>
<b>Primary designated offences</b>		
Sexual assault	15	19.5
Assault with a weapon	13	16.9
Murder	4	5.2
Manslaughter	3	3.9
Unlawfully causing bodily harm	2	2.6
Causing bodily harm with intent	2	2.6
Inviting sexual touching	1	1.3
Juvenile prostitution – related	1	1.3
Sexual assault with a weapon	1	1.3
Kidnapping	1	1.3
Explosive or other lethal device	1	1.3
<b>Secondary designated offences</b>		
Breaking and entering	39	50.6
Robbery	18	23.4
Assault	16	20.8
Assaulting peace officer	8	10.4
Arson	4	5.2
Indecent acts	1	1.3
Impaired driving causing bodily harm	1	1.3
<b>Non-designated offences</b>		
Theft	42	54.5
Breach	24	31.2
Possession by crime	23	29.9
Driving	22	28.6
Mischief	19	24.7
Possessing weapons	18	23.4
Deception	17	22.1
Drugs	14	18.2
Escaping custody	11	14.3

Note: Because of the large number of non-designated offences recorded, only those committed by more than 10% of the sample are shown in the table.

of a secondary designated offence were ordered to provide a DNA sample to the NDDB, a larger proportion of them would have been included. If *all* prior convictions required entry into the NDDB, a substantial majority of the predatory sexual offenders would have

**Table 4: Breakdown of the previous convictions of the sexual assaulters with criminal records (N = 76)**

Offence type	#	%
Primary designated offences		
Sexual assault	19	25.0
Assault with weapon	18	23.7
Unlawfully causing bodily harm	3	3.9
Manslaughter	2	2.6
Causing bodily harm with intent	2	2.6
Sexual assault with weapon	2	2.6
Kidnapping	1	1.3
Hostage taking	1	1.3
Secondary designated offences		
Breaking and entering	40	52.6
Assault	17	22.4
Robbery	12	15.8
Assaulting a peace officer	6	7.9
Indecent acts	3	3.9
Arson	3	3.9
Non-designated offences		
Theft	50	65.8
Breaches	31	40.8
Possession by crime	25	32.9
Driving	21	27.6
Escaping custody	20	26.3
Drugs	19	25.0
Possessing weapons	18	23.7
Deception	14	18.4
Mischief	14	18.4
Indecent acts on female	9	11.8
Causing a disturbance	8	10.5

Note: Because of the large number of non-designated offences recorded, only those committed by more than 10% of the sample are presented in the table.

populated it before they committed the crime in question. Overall, sexual predators are less likely to have a previous conviction for a primary designated offence than to have a previous conviction for a secondary designated offence, and they are most likely to have been convicted of a non-designated offence. Results also show that none of the murderers or assaulters had ever been convicted of

a majority of the primary designated offences (e.g., seizing control of ship or fixed platform) or secondary designated offences (e.g., bestiality in the presence of or by child). These findings suggest that the current legislation of the NDDB may not be achieving its maximum potential for the identification of sexual predators, who are undeniably among the most serious offenders.

Of utmost importance to the investigative value of the DNA Identification Act is what individuals populate the NDDB. It appears that most of the current offences that require an offender to be included in the COI are not useful in solving sexual murder or assault cases. As mentioned previously, the act currently stipulates that courts are required to order an offender to provide a DNA sample following a conviction for a primary designated offence and may order DNA provision following a conviction for a secondary designated offence. This facilitates identification of offenders if they should commit a subsequent crime. If offenders were included in the COI prior to committing their first designated offence, however, the possibility of identifying them following that offence would increase. Earlier inclusion in the COI could be achieved by ordering DNA sampling following convictions for some non-designated and secondary designated offences. For instance, required DNA sampling following breaking-and-entering and theft convictions would have enabled police to use DNA evidence to identify at least half, if not all, of the sexual predators in the present study.<sup>3</sup>

It is acknowledged that the taking of bodily substances from individuals by the state is an intrusive process, constituting a search, and is therefore subject to Charter<sup>4</sup> considerations. For this reason, it is anticipated that broadening the category of designated offences to provide for mandatory DNA sampling would invite Charter scrutiny. It appears that Parliament was very careful in striking what it considered to be the appropriate balance in enacting the DNA Identification Act and DNA warrant scheme in an effort to Charter-proof the legislation against anticipated constitutional challenges. However, we suggest that in the quest to identify a reasonable balance between individual rights and the protection of society, the effectiveness of the NDDB as an investigative (and perhaps pre-emptive) tool has been hindered. A justifiable balance between these competing interests could be accomplished even if the list of designated offences were expanded. In responding to any proportionality argument that is likely to arise, as discussed by the Supreme Court of Canada in *R. v. Oakes* (1986), the key is the ability to demonstrate, using

empirical evidence generated by this study and others, that there exists a rational basis for the expansion of designated offences in collecting DNA samples based on a knowledge and understanding of the antecedents of serious sexual offenders.

In addition to Charter considerations, there are political, administrative, and financial issues associated with adding such high-volume offences as breaking and entering and theft to the list of primary designated offences. It is acknowledged that drawing conclusions about amending the legislation is beyond the scope of this article and rests upon proper cost-benefit analysis by policy makers. However, our data suggest that the list of primary designated offences must be expanded if the current legislation is to achieve its primary purpose. It is possible that these amendments are not feasible under the current budget of the NDDB. In this case, either the budget would have to be increased or policy makers would need to rethink the primary designated offences that are mandated by the current legislation in order to maximize investigative potential. Yet, given that the NDDB has still not reached its physical or financial capacity (National Police Services 2004), we conjecture that expanding the list of primary designated offences is a feasible option. In any case, the bottom line is that if the recommendations suggested by the data cannot be made within the current budget and the budget cannot be increased, the full utility of the DNA Identification Act must be questioned.

The addition of offences is limited by the current criteria for selecting designated offences (i.e., the nature of the crime, the seriousness of the crime, and the likelihood of the perpetrator's bodily substances being left behind) (Department of Justice 2002). This study suggests that offences selected based on these criteria may be inadequate for the identification of sexual predators. More effective legislation should consider evidence showing that individuals responsible for serious offences are more likely to have prior convictions for less serious crimes. In sum, our results suggest that the effectiveness of the NDDB for the identification of sexual predators could be improved by requiring mandatory provision of DNA samples following convictions for some secondary designated and non-designated offences.

## Notes

1. See [www.nddb-bndg.org/legis\\_e.htm](http://www.nddb-bndg.org/legis_e.htm) for a complete list of the 38 primary designated offences and 21 secondary designated offences.

2. The NDDDB cost \$10.9 million to implement and currently costs roughly \$2.9 million per year to maintain. At full capacity, it is estimated that it will cost \$5 million per year to maintain (National Police Services 2004).
3. This figure could be as low as 55% for the sexual murderers and 65% for the sexual assaulters, or as high as 100% for both groups. The lower limit is based on the assumption that there is complete overlap between those convicted of breaking and entering and those convicted of theft; the upper limit is based on the assumption that there is zero overlap.
4. The Canadian Charter of Rights and Freedoms is a constitutionally entrenched bill of rights that forms part of the Constitution of Canada adopted in 1982.

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